

FOREST INSECT CONDITIONS ON THE BRIDGER NATIONAL FOREST 1965

The following is an account of the important forest insect problems encountered on the Bridger National Forest this year. Part of this information was compiled from aerial survey data, and part was the result of ground examinations to supplement the aerial findings. A special evaluation survey was made in spruce budworm infestations to record defoliation and collect egg masses.

The major forest insect problems were mountain pine beetle, Douglas-fir beetle, spruce budworm and a defoliator complex on lodgepole pine. Briefly, the number of lodgepole pines killed by the mountain pine beetle has steadily increased since 1961--the largest infestation occurs in the Greys River Drainage. Spruce budworm spread into new areas of Douglas-fir and subalpine fir in Bailey and Porcupine Creeks. Damage varied from light to medium but overall defoliation in 1966 is expected to remain light. The Douglas-fir beetle continued its killing of mature and overmature trees in many areas, with the largest outbreaks occurring on the south side of the Snake River. Sporadic defoliation of lodgepole pine stands by an insect complex occurred in localized areas. A more detailed discussion of these problems follows:

Mountain pine beetle, *Dendroctonus monticolae* Hopk.

Mountain pine beetle activity has steadily increased on the Bridger National Forest since 1961. Although the number of trees killed has more than doubled in some areas yearly, "explosive" type buildups have not occurred as they have in other areas within the Region. Aerial survey estimates show a total of over 10,000 lodgepole pine killed this year. Many outbreaks are in concentrated groups while others consist of individual trees scattered over fairly extensive areas.

Bridger Division

An estimated 800-1,000 newly infested trees occur on about 1,000 acres on the ridge north of Willow Lake. Infested trees average 12.4 inches in d.b.h. Brood and attack densities average 195.2 and 11.1 per square foot of bark sample respectively. Ratio of newly attacked trees to trees killed last year is 1:1. The infestation is classed as epidemic with an increasing trend. Unless the infestation is treated, or biological factors reduce the beetle population significantly within the next year, an increase in the number of trees killed can be expected in 1966.

Aerial surveys recorded additional mountain pine beetle activity in the following areas:

<u>Area</u>	<u>Number of Trees</u>
Upper New Fork Lakes - South Side	100-150
Surveyors Park	50-60
Burnt Lake	40-50
Willow Lake - South	30-50

Wyoming Division

The majority of mountain pine beetle infested trees on the Wyoming Division occur in the Greys River Drainage. The number of infested trees has increased rapidly the past two years.

A list of areas examined, showing respective brood counts, attack densities, and trend predictions follows:

<u>Area</u>	<u>Ave. Fall Brood Density/sq. ft.</u>	<u>Attacks Per sq. ft.</u>	
Aspen Hollow	292.0	15.0	Epidemic increasing
Dead Dog Creek	152.8	11.0	Epidemic static
Porcupine Creek-			
Grizzly Basin	263.2	11.2	Epidemic increasing

The ratio of newly attacked trees to trees killed last year is 1:1 or less in Aspen Hollow. An estimated 1,500-2,000 "faders" occur in this area. Brood and attack densities are far above the point necessary to maintain the infestation at its present epidemic level. There are no signs to indicate a reversal of the present epidemic trend within the next year.

An estimated 100-150 currently infested trees occur in Dead Dog Creek. The ratio of newly attacked trees to trees killed last year was 1:1 or slightly less. The ratio of successfully attacked trees to pitchouts was 2:1. This infestation was classed as epidemic with equal or slightly less damage predicted for next year.

Survey estimates indicate 450-500 newly attacked trees in Grizzly Basin and Porcupine Creek. The ratio of newly attacked trees to trees killed last year is 1-1½:1. The infestation is classed as epidemic with no significant decline forecast during the immediate future.

Aerial surveys reported approximately 4,000-5,000 new "faders" in Robinson Creek. Subsequent examinations found one "pitchout" for every 2.5 successfully attacked trees. The ratio of newly attacked trees to trees killed last year is 1½:1. Brood and attack densities average 174.0 and 16.8 per square foot of bark sample respectively. At the time

of sampling, beetles were still depositing eggs. Brood densities will likely exceed 200 per square foot when egg deposition is complete. The infestation is classed as epidemic and there is no indication of a downward trend occurring within the next year.

Approximately 1,000 to 1,500 infested trees are scattered along the forest boundary in Fish, Christopherson, and Gomm Creeks south of Smoot. The ratio of newly infested trees to trees killed last year is $1\frac{1}{2}:1$. Brood and attack densities average 364.0 and 13.8 per square foot of bark surface, respectively. Attacks were confined to mature and overmature trees. This outbreak also will probably continue at its present level next year.

In addition, aerial observations reported current mountain pine beetle activity in the following areas:

<u>Area</u>	<u>Number of Faders</u>
Skull to Poison Creek	100-150
Blind Bull Creek	400
Three Forks Elk Creek	150-200
White Creek-Lost Creek	300
Murphy Creek	300-400
Deadman Creek	300
Cottonwood-Haines Flat	125
South Fork Middle Beaver Creek	150

No biological evaluations were made of these infestations.

Douglas-fir beetle, *Dendroctonus pseudotsugae* Hopk.

Aerial observers recorded active Douglas-fir beetle infestations scattered throughout the Forest. Most infestation centers occur in 5 to 15 tree groups in widely scattered areas.

A list of the most significant areas of infestation as delineated from the air follows:

<u>Area</u>	<u>Number of Faders</u>
Bailey Lake	20
Dry Wash	50-75
Snake River	350
Squaw Creek	50
High Creek	20-30
Cottonwood Reservoir	100
Willow Creek	30-40
Little White Creek	30-40
Cedar Creek	20-30
Stewart Creek	20
Greys River	30-40
Fish Creek	30

In larger infestations, the ratio of new "faders" to old was about 1:1. The overall fading ratio in the smaller tree groups was approximately 1:3. Most of the smaller infestations appeared to be dying out. Because of inaccessibility and time and manpower limitations, it was not possible to make ground examinations and evaluations of any of the Douglas-fir beetle infestations on the Forest this year. Therefore, trend predictions based on biological data have not been made. On the basis of past experience, however, and a knowledge of other infestations under similar conditions elsewhere, certain predictions can be made. In areas where the number of old "faders" exceeds the new, beetle kill will likely decline in 1966. In larger infestations where the ratio of current "faders" to old is 1.1 or higher, and there is adequate host material nearby, beetle populations and subsequent tree mortality will increase or, at the least, remain static. Every possible effort will be made to evaluate the most serious infestations next year.

Spruce budworm, *Choristoneura fumiferana* (Clem.)

Approximately 10,000 acres of subalpine and Douglas-fir were defoliated by the spruce budworm between Bailey and West Bailey Creeks and in Porcupine Creek, Greys River Drainage. Overall defoliation in both areas was classed as light.

Sequential samples of Douglas-fir foliage taken from the infestations in Bailey and West Bailey Creeks indicated that defoliation of 1965 growth was less than 25 percent. Egg mass density averaged 12.27 per thousand square inches of foliage. On this basis, defoliation of new growth in these areas next year is expected to average between 51-90 percent.

In Porcupine Creek, defoliation of 1965 growth was less than 25 percent and egg mass density averaged 3.7 per thousand square inches of foliage. Defoliation of new growth next year is expected to average between 15-25 percent.

In order to avoid possible misunderstanding, it should be mentioned that these defoliation estimates are based only on the percentage of new buds and needles attacked. Overall defoliation may be less than ten percent, even though fifty percent of the new foliage has been removed.

Spruce budworm populations have not reached epidemic proportions, and it is doubtful whether they will in the near future. Overall damage is light and confined mainly to subalpine fir. Some movement into budworm-free areas can be expected next year, but intensity of damage should remain light. No trees are under stress, nor are any expected to receive greater damage in 1966.

Defoliator complex - Lodgepole pine

Defoliators of lodgepole pine have increased in the Region in recent years. Species collected from defoliated areas were: jack pine budworm, Choristoneura pinus Freeman; sugar pine tortrix, C. lambertiana (Busck); pine needle sheath miner, Zelleria haimbachi Busck; lodgepole pine needle miner, Recurvaria milleri Busck; and two, tentatively identified as pine needle tiers, Argyrotaenia tabulana Free; and the pine tube moth, Argyrotaenia pinatibana Kearf.

Defoliation varied from light to moderate. The major infestation areas, extent of intensity of damage, as reported by aerial observers follow:

<u>Area</u>	<u>Acres</u>	<u>Defoliation Intensity</u>
Bailey Creek	150-200	Light
Blind Trail Creek	550	Light to moderate
Southeast of Turnerville	2000	Light to moderate

This feeding complex is more extensive than indicated. Many infected areas may have gone unnoticed because light feeding is almost impossible to detect from the air. During routine ground investigations of mountain pine beetle damage, light feeding was observed in Grizzly Basin and in Gomm Creek. The extent of these infestations is unknown; however, it is likely that this complex is established in most of the lodgepole stands in the northern part of the Forest.

Feeding is confined mainly to the new growth. Successive years of aggressive feeding can severely stunt and dwarf trees, but mortality has not yet been observed. Trees usually re-foliate once insect pressure is removed. As a rule, outbreaks persist for one year, possibly two, then subside naturally or move into new areas.

Date

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